```
FILE 'REGISTRY' ENTERED AT 16:09:24 ON 29 SEP 2003

=> S EPOXIDE HYDROLASE/CN
L1             1 EPOXIDE HYDROLASE/CN

=> D

L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2003 ACS on STN
RN   9048-63-9  REGISTRY
CN   Hydratase, epoxide (9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   cis-Epoxide hydrolase
CN   E.C. 3.3.2.3
CN   E.C. 4.2.1.63
CN   Epoxide hydrase
CN   Epoxide hydratase
CN     ***Epoxide hydrolase***
CN   Epoxide lyase
CN   Epoxyhydrolase
CN   Styrene oxide hydrolase
CN   trans-Stilbene oxide hydrolase
CN   Xenobiotic epoxide hydrolase
MF   Unspecified
CI   MAN
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO,
       CA, CAPLUS, CASREACT, CEN, CHEMCATS, CHEMINFORMRX, CIN, EMBASE,
       NAPRALERT, NIOSHTIC, PROMT, TOXCENTER, USPAT2, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
            2259 REFERENCES IN FILE CA (1907 TO DATE)
               9 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
            2262 REFERENCES IN FILE CAPLUS (1907 TO DATE)


FILE 'CAPLUS' ENTERED AT 16:10:09 ON 29 SEP 2003


=> S L1;S EPOXIDE HYDROLASE;S STREPTOMYCES;S EPOXIDE;S NITROBENZYLPYRIDINE;S NBP
L2          2262 L1


          42784 EPOXIDE
          24282 EPOXIDES
          55560 EPOXIDE
                  (EPOXIDE OR EPOXIDES)
          17472 HYDROLASE
           7757 HYDROLASES
          21518 HYDROLASE
                  (HYDROLASE OR HYDROLASES)
L3         2169 EPOXIDE HYDROLASE
                  (EPOXIDE(W)HYDROLASE)


L4        32113 STREPTOMYCES


          42784 EPOXIDE
          24282 EPOXIDES
L5        55560 EPOXIDE
                  (EPOXIDE OR EPOXIDES)


            180 NITROBENZYLPYRIDINE
             14 NITROBENZYLPYRIDINES
L6          190 NITROBENZYLPYRIDINE
                  (NITROBENZYLPYRIDINE OR NITROBENZYLPYRIDINES)


            335 NBP
             36 NBPS
L7          360 NBP
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(NBP OR NBPS)

=> S L2,L3
L8 2761 (L2 OR L3)

=> S L8 AND L4
L9 17 L8 AND L4

=> D 1-17 CBIB ABS

L9 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2003:656325 Document No. 139:194302 The ***Streptomyces*** globisporus gene cluster for biosynthesis of the enediyne antitumor antibiotic C-1027 and the generation of novel variants. Shen, Ben; Liu, Wen (Wisconsin Alumni Research Foundation, USA). U.S. Pat. Appl. Publ. US 2003157654 A1 20030821, 119 pp., Cont.-in-part of U.S. Ser. No. 159,257. (English). CODEN: USXXCO. APPLICATION: US 2002-292198 20021112. PRIORITY: US 1999-PV115434 19990106; US 2000-478188 20000105; US 2002-159257 20020531.
GI

/ Structure 1 in file .gra /

AB The gene cluster of ***Streptomyces*** globisporus responsible for the biosynthesis of the enediyne C-1027 of ***Streptomyces*** globisporus is cloned and characterized and methods of manipulating the genes to create novel variants of the antibiotic (I, R1=H,OH; R2=H,Cl; R3=H, OMe) are described. Genes involved in antibiotic biosynthesis in S. globisporus were screened for by PCR using primers derived from conserved regions of genes of interest. No polyketide synthase genes were found, but a gene for a dNDP-glucose 4,6-dehydratase was found. The gene was cloned and used as a start point for a chromosome walk that covered 75 kilobases. The antibiotic is synthesized by a type I polyketide synthase with a novel domain organization that leads to synthesis of the antibiotic from four different biosynthetic building blocks. Disruption of the sgcC gene for the dehydratase resulted in the accumulation of a deshydroxy variant of the antibiotic. Other mutations leading to the formation of a deschloro variant and a desmethoxy variant.

L9 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2003:408176 A Complete Gene Cluster from ***Streptomyces*** nanchangensis NS3226 Encoding Biosynthesis of the Polyether Ionophore Nanchangmycin. Sun, Yuhui; Zhou, Xiufen; Dong, Hui; Tu, Guoquan; Wang, Min; Wang, Bofei; Deng, Zixin (Bio-X Life Science Research Center, Shanghai Jiaotong University, Shanghai, 200030, Peop. Rep. China). Chemistry & Biology, 10(5), 431-441 (English) 2003. CODEN: CBOLE2. ISSN: 1074-5521. Publisher: Cell Press.
AB The PKS genes for biosynthesis of the polyether nanchangmycin are organized to encode two sets of proteins (six and seven ORFs, resp.), but are sepd. by independent ORFs that encode an epimerase, epoxidase, and ***epoxide*** ***hydrolase*** , and, notably, an independent ACP. One of the PKS modules lacks a corresponding ACP. We propose that the process of oxidative cyclization to form the polyether structure occurs when the polyketide chain is still anchored on the independent ACP before release. 4-O-methyl-L-rhodinose biosynthesis and its transglycosylation involve four putative genes, and regulation of nanchangmycin biosynthesis seems to involve activation as well as repression. In-frame deletion of a KR6 domain generated the nanchangmycin aglycon with loss of 4-O-methyl-L-rhodinose and antibacterial activity, in agreement with the assignments of the PKS domains catalyzing specific biosynthetic steps.

L9 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2003:203321 Document No. 138:216472 High throughput or capillary-based screening of genetic libraries containing recombined DNA from several species for a catalytic or biological activity. Short, Jay M.; Keller, Martin; Lafferty, William Michael (USA). U.S. Pat. Appl. Publ. US 2003049841 A1 20030313, 111 pp., Cont.-in-part of U.S. Ser. No. 894,956. (English). CODEN: USXXCO. APPLICATION: US 2001-975036 20011010.

PRIORITY: US 1997-876276 19970616; US 1998-98206 19980616; US 1999-444112 19991122; US 2000-685432 20001010; US 2000-687219 20001012; US 2001-790321 20010221; US 2001-894956 20010627; US 2001-PV309101 20010731.

AB Provided is a method of screening or enriching a sample contg. polynucleotides from a mixed population of organisms. The method includes creating a DNA library from a mixed population of organisms and sepg. clones contg. a polynucleotide sequence of interest on an analyzer detects a detectable mol. on a probe or bioactive substrate. The analyzer includes FACS devices, SQUID devices and MCS devices. The sepd. or enriched library can then be further process by activity based screening or sequence based screening. In addn., the enriched sequence can be compared to a database and to identify sequences in the database which have homol. to a clone in the library thereby obtaining a nucleic acid profile of the mixed population of organisms. Individual members of the library may contain sequences derived from more than one species in the mixed population.

L9 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN

2003:6148 Document No. 138:54642 Methods for the manufacture of pure single enantiomer compounds and for selecting enantioselective enzymes. Weiner, David; Hitchman, Tim; Zhao, Lishan; Burk, Mark (Diversa Corporation, USA). PCT Int. Appl. WO 2003000909 A2 20030103, 122 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US19706 20020621. PRIORITY: US 2001-PV300189 20010621; US 2001-PV340291 20011214.

AB The invention provides biocatalytic methods for the manuf. of pure single enantiomer compds. The invention provides methods of screening for enzymes which are highly enantioselective or enzymes that can provide any desired stereoisomer of a compd. The invention provides the use of single enantiomer substrates in performing a growth screen of a clonal library to identify highly stereoselective enzymes. In one aspect, methods for screening and identification of enzymes, e.g., transaminases, nitrilases, aldolases, ***epoxide*** ***hydrolases*** are provided. Methods for the prodn. and screening of gene libraries generated form nucleic acids isolated from more than one organism for enzyme, e.g., transaminase, activities are also provided.

L9 ANSWER 5 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN

2002:293894 Document No. 136:320313 High throughput or capillary-based screening of libraries of compounds for biological activities. Short, Jay M.; Keller, Martin; Lafferty, William Michael (Diversa Corporation, USA). PCT Int. Appl. WO 2002031203 A2 20020418, 229 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US31806 20011010. PRIORITY: US 2000-685432 20001010; US 2000-738871 20001215; US 2001-790321 20010221; US 2001-894956 20010627; US 2001-PV309101 20010731.

AB Provided is a method of screening or enriching a sample contg. polynucleotides from a mixed population of organisms. The method includes creating a DNA library from a plurality of nucleic acid sequences of a mixed population of organisms and sepg. clones contg. a polynucleotide sequence of interest on an analyzer detects a detectable mol. on a probe or bioactive substrate. Individual members of the library can be sepd. and analyzed using an ordered array of fine capillaries that can be used to take up individual members of the library. The capillary array may contain up to 1 million members. Methods of analyzing biol. activities, such as enzyme assays or reporter gene expression, are described. The analyzer includes FACS devices, SQUID devices and MSC devices. The sepd. or enrich library can then be further process by activity based screening

of sequence based screening. In addn., the enriched sequence can be compared to a database and to identify sequences in the database which have homol. to a clone in the library thereby obtaining a nucleic acid profile of the mixed population of organisms.

L9 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2002:220779 Document No. 136:258268 Combinatorial screening of libraries from mixed populations of organisms for the identification of novel biologically active substances. Short, Jay M. (Diversa Corporation, USA). PCT Int. Appl. WO 2002022810 A2 20020321, 154 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US29712 20010917. PRIORITY: US 2000-663620 20000915.
AB Provided is a method of screening gene libraries derived from a mixed population of organisms for a bioactivity of biomol. of interest. The mixed population of organisms can be a cultured population or an uncultured population from, for example, the environment. Also provided are methods of screening isolates or enriched populations of organisms, which isolates include a population that is spatially, temporally, or hierarchical, for example, of a particular species, genus family, or class of organisms. Identified clones contg. a biomol. or bioactivity of interest can be further variegated or the DNA contained in the clone can be variegated to create novel biomols. or bioactivities of interest.

L9 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2001:896832 Document No. 136:294681 Enzyme-triggered enantioconvergent transformation of haloalkyl epoxides. Mayer, Sandra F.; Steinreiber, Andreas; Orru, Romano V. A.; Faber, Kurt (Department of Chemistry, Organic & Bioorganic Chemistry, University of Graz, Graz, 8010, Austria). European Journal of Organic Chemistry (23), 4537-4542 (English) 2001. CODEN: EJOCFK. ISSN: 1434-193X. OTHER SOURCES: CASREACT 136:294681. Publisher: Wiley-VCH Verlag GmbH.
GI

/ Structure 2 in file .gra /

AB Biocatalytic hydrolysis of 2,3-disubstituted rac-cis- and rac-trans-haloalkyl epoxides, e.g., I, using the ***epoxide*** ***hydrolase*** activity of whole bacterial cells furnished the corresponding vicinal diols as intermediates; these (spontaneously) underwent ring closure to yield cyclic products II or III (R1 = n-Bu, Et) through an enzyme-triggered cascade reaction. In particular, cis-configured substrates were transformed in an enantioconvergent fashion, which resulted in the formation of single stereoisomeric products in 100% des and up to 92% ees from the racemates.

L9 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2001:693525 Document No. 135:270007 A type I polyketide synthase for monensin biosynthesis and the corresponding gene cluster of ***Streptomyces*** cinnamonensis and the engineering of novel polyketide synthases. Leadlay, Peter Francis; Staunton, James; Oliynyk, Marko (Biotica Technology Limited, UK). PCT Int. Appl. WO 2001068867 A1 20010920, 212 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 2000-GB2072 20000530. PRIORITY: GB 1999-12563 19990528.
AB The complete sequence of the gene cluster for the monensin type I polyketide synthase, from S. cinnamonensis, is provided. Thus variant

polyketides contg. monensin-derived elements can be genetically engineered. Furthermore there are features, e.g. a regulatory protein monR, which are of wide utility. The use of S. cinnamonensis as an expression host for other polyketide synthase genes is also demonstrated. The genes were identified in a Sau3A partial digest library from ***Streptomyces*** cinnamonensis in pWE15 by screening with probes derived from the erythromycin synthase gene cluster of Saccharopolyspora erythraea. Increasing the yield of monensins by increasing the copy no. of the monR transcription regulator gene is demonstrated.

L9 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN

2001:472983 Document No. 135:57865 Generating diverse libraries of hydrolase gene variants and screening them for the ability to catalyze specific reactions for use in remediation. Affholter, Joseph A. (Maxygen, Inc., USA). PCT Int. Appl. WO 2001046476 A1 20010628, 207 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2000-US35094 20001222. PRIORITY: US 1999-PV171875 19991223; US 2000-PV226238 20000817.

AB The present invention relates to halocarbon and halohydrocarbon chem., including methods of dehalogenating halocarbons and halohydrocarbons to provide, inter alia, alcs., polyols, and epoxides. In general, the methods involve reaction pathways catalyzed by altered hydrolase enzymes that can provide stereoselective or stereospecific reaction products. The invention also includes methods of providing altered nucleic acids that encode altered dehalogenase or other hydrolase enzymes. Addnl., the invention includes various reaction formats and kits. Methods of creating variant libraries are reviewed and candidate dehalogenases are identified.

L9 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN

2001:78539 Document No. 134:127826 ***Epoxide*** ***hydrolases*** from ***Streptomyces*** and their use in resolution of racemic epoxides. Zocher, Frank; Enzelberger, Markus; Schmid, Rolf D.; Wohlleben, Wolfgang; Hauer, Bernhard (BASF Aktiengesellschaft, Germany). PCT Int. Appl. WO 2001007623 A1 20010201, 33 pp. DESIGNATED STATES: W: AU, CA, CN, JP, NO, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (German). CODEN: PIXXD2. APPLICATION: WO 2000-EP7211 20000726. PRIORITY: DE 1999-19935113 19990727.

AB The invention relates to ***epoxide*** ***hydrolases*** from bacteria of the genus ***Streptomyces*** sp., to a novel method for the enzymic sepn. of epoxide enantiomer mixts., to a novel assay method for ***epoxide*** ***hydrolase*** activity, to a screening method for detecting ***epoxide*** ***hydrolase*** activity, and to the use of bacteria of the genus ***Streptomyces*** sp. and the ***epoxide*** ***hydrolases*** obtained from them for enantioselective epoxide hydrolysis.

L9 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN

2001:43457 Document No. 134:97164 High throughput screening for novel enzymes by co-encapsulation and fluorescence activated cell sorting in genome expression library. Short, Jay M.; Keller, Martin (Diversa Corporation, USA). U.S. US 6174673 B1 20010116, 38 pp., Cont.-in-part of U.S. Ser. No. 876,278. (English). CODEN: USXXAM. APPLICATION: US 1998-98206 19980616. PRIORITY: US 1997-876276 19970616.

AB Disclosed is a process for identifying clones having a specified activity of interest, which process comprises (i) generating one or more expression libraries derived from nuclei acid directly isolated from the environment; and (ii) screening said libraries utilizing a fluorescence activated cell sorter to identify said clones. More particularly, this is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) exposing said libraries to a particular substrate or substrates of interest; and (iii) screening said exposed libraries utilizing a fluorescence activated cell sorter to identify clones which react with the substrate or substrates. Also provided is a process for identifying clones having a specified

activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; and (ii) screening said exposed libraries utilizing an assay requiring co-encapsulation, a binding event or the covalent modification of a target, and a fluorescence activated cell sorter to identify pos. clones.

L9 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2000:475677 Document No. 133:101923 The ***Streptomyces*** globisporus gene cluster encoding enzymes of biosynthesis of the enediyne antitumor antibiotic C-1027. Shen, Ben; Liu, Wen; Christenson, Steven D.; Standage, Scott (The Regents of the University of California, USA). PCT Int. Appl. WO 2000040596 A1 20000713, 160 pp. DESIGNATED STATES: W: CA, JP; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 2000-US446 20000106. PRIORITY: US 1999-PV115434 19990106; US 2000-477962 20000105.
AB This invention provides nucleic acid sequences and characterization of the gene cluster responsible for the biosynthesis of the enediyne C-1027 of ***Streptomyces*** globisporus. Methods are provided for the biosynthesis of enediynes, enediyne analogs and other biol. mols. Genes involved in antibiotic biosynthesis in S. globisporus were screened for by PCR using primers derived from conserved regions of genes of interest. No polyketide synthase genes were found, but a gene for a dNDP-glucose 4,6-dehydratase was found. The gene was cloned and used as a start point for a chromosome walk that covered 75 kilobases. Disruption of the sgcA gene for the dehydratase eliminated C-1027 biosynthesis. Biosynthesis was restored by complementation with a wild-type sgcA gene. Overexpression of the sgcB gene led to slight increase in C-1027 yield.

L9 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2000:140563 Document No. 132:176583 Screening nucleic acid libraries for novel bioactivities. Short, Jay M. (Diversa Corporation, USA). U.S. US 6030779 A 20000229, 13 pp., Cont.-in-part of U.S. 692,002. (English). CODEN: USXXAM. APPLICATION: US 1997-944795 19971006. PRIORITY: US 1995-503606 19950718; US 1995-568994 19951207; US 1995-8317 19951207; US 1996-657409 19960603; US 1996-692002 19960802.
AB Disclosed is a process for identifying clones having a specified enzyme activity by screening for the specified enzyme activity in a library of clones prepd. by (i) selectively isolating target nucleic acid from nucleic acid derived from at least one microorganism, by use of at least one polynucleotide probe comprising at least a portion of a nucleic acid sequence encoding an enzyme having the specified enzyme activity; and (ii) transforming a host with isolated target nucleic acid to produce a library of clones which are screened for the specified enzyme activity. Disclosed is a process for identifying clones having a specified activity of interest, which process comprises (i) generating one or more expression libraries derived from nucleic acid directly isolated from the environment; and (ii) screening said libraries utilizing an assay system. More particularly, this is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) exposing said libraries to a particular substrate or substrates of interest; and (iii) screening said exposed libraries utilizing a fluorescence activated cell sorter to identify clones which react with the substrate or substrates. Also provided is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) screening said exposed libraries utilizing an assay requiring a binding event or the covalent modification of a target, and a fluorescence activated cell sorter to identify pos. clones.

L9 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
2000:60643 Document No. 132:221407 ***Epoxide*** ***hydrolase*** activity of ***Streptomyces*** strains. Zocher, F.; Enzelberger, M. M.; Bornscheuer, U. T.; Hauer, B.; Wohlleben, W.; Schmid, R. D. (Institut fur Technische Biochemie, Universitat Stuttgart, Stuttgart, D-70569, Germany). Journal of Biotechnology, 77(2,3), 287-292 (English) 2000. CODEN: JBITD4. ISSN: 0168-1656. Publisher: Elsevier Science Ltd..
AB The discovery of ***epoxide*** ***hydrolases*** within a ***Streptomyces*** sp. strain collection is described. Screening was

performed in 96 well microtiter plates using a modified 4-(p-nitrobenzyl)pyridine assay with styrene oxide, 1,2-epoxy-hexane or 3-Ph ethylglycidate (3-PEG) as substrates. Out of 120 strains investigated, S. antibioticus Tu4, S. arenae Tu495 and S. fradiae Tu27 exhibited ***epoxide*** ***hydrolase*** activity. These strains were further investigated by performing lab.-scale biotransformations utilizing styrene oxide, 1,2-epoxy-hexane and 3-PEG followed by subsequent quant. anal. employing chiral gas chromatog. The highest conversions were achieved with whole cells from S. antibioticus Tu4 in the presence of 10% (vol./vol.) DMSO. However, enantioselectivity was only satisfying (E=31) in the presence of 5% (vol./vol.) acetone, which allowed isolation of optically pure non-hydrolyzed (R)-styrene oxide (99% enantiomeric excess (ee)) and (S)-phenyl-1,2-ethandiol (72% ee) at 55% conversion after 24 h. The resoln. of 3-PEG proceeded with slightly lower enantioselectivity albeit higher reaction rates. With S. fradiae Tu27 and S. arenae Tu495 enantioselectivity towards styrene oxide was only E=3-4.

L9 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN

1999:172639 Document No. 130:205916 Screening nucleic acid populations for novel bioactivities. Short, Jay M. (Diversa Corporation, USA). PCT Int. Appl. WO 9910539 A1 19990304, 99 pp. DESIGNATED STATES: W: AU, CA, JP; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1998-US17779 19980826. PRIORITY: US 1997-918406 19970826.

AB Disclosed is a process for identifying clones having a specified activity of interest, which process comprises (i) generating one or more expression libraries derived from nucleic acid directly isolated from the environment; and (ii) screening said libraries utilizing an assay system. More particularly, this is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) exposing said libraries to a particular substrate or substrates of interest; and (iii) screening said exposed libraries utilizing a fluorescence activated cell sorter to identify clones which react with the substrate or substrates. Also provided is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) screening said exposed libraries utilizing an assay requiring a binding event or the covalent modification of a target, and a fluorescence activated cell sorter to identify pos. clones.

L9 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN

1997:372362 Document No. 127:105994 Primary structure and catalytic mechanism of the ***epoxide*** ***hydrolase*** from Agrobacterium radiobacter AD1. Rink, Rick; Fennema, Marko; Smids, Minke; Dehmel, Uwe; Janssen, Dick B. (Dep. Biochemistry, Groningen Biomolecular Sciences Biotechnology Inst., Univ. Groningen, Groningen, 9747 AG, Neth.). Journal of Biological Chemistry, 272(23), 14650-14657 (English) 1997. CODEN: JBCHA3. ISSN: 0021-9258. Publisher: American Society for Biochemistry and Molecular Biology.

AB The ***epoxide*** ***hydrolase*** gene from Agrobacterium radiobacter AD1, a bacterium that is able to grow on epichlorohydrin as the sole carbon source, was cloned by means of the polymerase chain reaction with two degenerate primers based on the N-terminal and C-terminal sequences of the enzyme. The ***epoxide*** ***hydrolase*** gene coded for a protein of 294 amino acids with a mol. mass of 34 kDa. An identical ***epoxide*** ***hydrolase*** gene was cloned from chromosomal DNA of the closely related strain A. radiobacter CFZ11. The recombinant ***epoxide*** ***hydrolase*** was expressed up to 40% of the total cellular protein content in Escherichia coli BL21(DE3) and the purified enzyme had a kcat of 21 s-1 with epichlorohydrin. Amino acid sequence similarity of the ***epoxide*** ***hydrolase*** with eukaryotic ***epoxide*** ***hydrolases*** , haloalkane dehalogenase from Xanthobacter autotrophicus GJ10, and bromoperoxidase A2 from ***Streptomyces*** aureofaciens indicated that it belonged to the .alpha./.beta.-hydrolase fold family. This conclusion was supported by secondary structure predictions and anal. of the secondary structure with CD spectroscopy. The catalytic triad residues of ***epoxide*** ***hydrolase*** are proposed to be Asp107, His275, and Asp246. Replacement of these residues

to Ala/Glu, Arg/Gln, and Ala, resp., resulted in a dramatic loss of activity for epichlorohydrin. The reaction mechanism of ***epoxide*** ***hydrolase*** proceeds via a covalently bound ester intermediate, as was shown by single turnover expts. with the His275 .fwdarw. Arg mutant of ***epoxide*** ***hydrolase*** in which the ester intermediate could be trapped.

L9 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2003 ACS on STN
1994:212246 Document No. 120:212246 Biosynthesis of PD 116740: origins of the carbon, hydrogen, and oxygen atoms and derivation from a 6-deoxybenz[a]anthraquinone. Gould, Steven J.; Cheng, Xingchun; Melville, Chris (Department of Chemistry, Oregon State University, Corvallis, OR, 97331-4003, USA). Journal of the American Chemical Society, 116(5), 1800-4 (English) 1994. CODEN: JACSAT. ISSN: 0002-7863.
GI

/ Structure 3 in file .gra /

AB The benz[a]anthraquinone antibiotic PD 116740 (I) is formed from the regular cyclization of a decaketide intermediate folded in a manner to generate the angular tetracyclic skeleton. The 6-deoxybenz[a]anthraquinone tetrangulol is an intermediate, indicating that 6-deoxygenation occurs at a prearom. stage in the biosynthesis. This was consistent with the lack of incorporation of acetate-derived oxygen at this site. Labeling of the C-5 hydroxyl by mol. oxygen indicates that enzymic epoxidn. of the K-region double bond, followed by action of an ***epoxide*** ***hydrolase*** , generates the 5,6-trans-diol moiety.

=> S L5 AND L6
L10 18 L5 AND L6

=> S L6,L7
L11 518 (L6 OR L7)

=> S L5 AND L11
L12 28 L5 AND L11

=> S L12 NOT L10
L13 10 L12 NOT L10

=> S L12,L10
L14 28 (L12 OR L10)

=> S L14 NOT L9
L15 27 L14 NOT L9

=> D 1-27 CBIB ABS

L15 ANSWER 1 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
2003:750228 Photosensitization effect and structure-activity on mutagenic potential by 4-(nitrobenzyl)pyridine (4- ***NBP***) test, of ***epoxides*** , olefins and alkylating agents. Kim, Jae Hyoun; Om, Ae Son (Department of Health Science, School of Natural Science, Dongduk Women's University, S. Korea). Han'guk Hwankyong Uisaeng Hakhoechi, 27(2), 43-50 (Korean) 2001. CODEN: HHUCDX. ISSN: 1225-5629. Publisher: Korean Environmental Health Society.
AB This paper reviews the results of a series of efforts to develop structure-activity models for slow-reacting chems. and olefins whose toxicity may be enhanced by the UV radiation. Photoinduced toxicity of 14 compds. was found to be a different result of competing factors of structure, having carbon-carbon double bonds. To mimic the biol. consequences of photooxidative damage in mammalian cells, the photochem. mutagenicity of 14 chems. was tested in the CAS. Simple olefins were photochem. mutagenic or carcinogenic with irradn., increasing the alkylating activity from zero level to 0.87 (abs/g) for styrene, 0.25 for 1-butene, 0.11 for 1-hexene, resp., whereas no photochem. mutagenicity was obsd. with 1-octene in the absence of the CAS. Oxide compds., however, showed a decreasing trend of photoalkylating activities in the presence or

absence of the CAS. We found that the the structure-activity relationship was not applicable to our data.

L15 ANSWER 2 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
2002:556537 Document No. 137:175257 Use of the DIPPR Database for Development of QSPR Correlations: Normal Boiling Point. Ericksen, Daniel; Wilding, W. Vincent; Oscarson, John L.; Rowley, Richard L. (Department of Chemical Engineering, Brigham Young University, Provo, UT, 84602, USA). Journal of Chemical and Engineering Data, 47(5), 1293-1302 (English) 2002. CODEN: JCEAAX. ISSN: 0021-9568. Publisher: American Chemical Society.
AB Tabulation of evaluated phys. property consts. and of their estd. uncertainties makes the DIPPR database a valuable tool for developing correlations for phys. properties of pure fluids. In this study, we have used the DIPPR database to develop a group-contribution method for the normal b.p. (***NBP***) of pure compds. The resultant correlation uses the mol. descriptors of mol. wt. and van der Waals vol. in addn. to Domalski-Hearing (DH) second-order group definitions. A training set of 1141 evaluated normal b.ps. of > 95% accuracy was selected from the database and correlated. The av. abs. deviation (AAD) was 7.8 K (1.9 %) with zero bias. Estns. of ***NBP*** for a test set of 384 compds. not used in the regression gave an AAD of 13.0 K (2.7 %). The results suggest that the method is comparable in accuracy to the best methods available for estg. ***NBP*** , but it has the convenient feature of DH group designations that are immediately compatible with currently available DH algorithms and software.

L15 ANSWER 3 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1999:772808 Document No. 132:23835 Treatment of polyester fibers for rubber reinforcement. Nakagawa, Kuniyoshi; Umino, Mitsuhiro (Unitika Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11335973 A2 19991207 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-145383 19980527.
AB The title process, giving reinforcing fibers with good interfacial adhesion and flexibility, consists of treating ***epoxide*** -treated polyester fibers with a mixt. of formaldehyde-resorcinol copolymer, rubber latex (e.g., Nipol 2518GL), and oxazolines (e.g., Epocros K-2030E), then heat treating the fibers.

L15 ANSWER 4 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1999:339880 Document No. 131:196125 A colorimetric assay suitable for screening ***epoxide*** hydrolase activity. Zocher, Frank; Enzelberger, Markus M.; Bornscheuer, Uwe T.; Hauer, Bernhard; Schmid, Rolf D. (Allmandring 31, Institute for Technical Biochemistry, Stuttgart University, Stuttgart, D-70569, Germany). Analytica Chimica Acta, 391(3), 345-351 (English) 1999. CODEN: ACACAM. ISSN: 0003-2670. Publisher: Elsevier Science B.V..
AB A UV/VIS spectrophotometric microtiter plate and a filter-paper based assay using 4-(p-nitrobenzyl)pyridine (***NBP***) were developed to det. ***epoxide*** hydrolytic activity by measuring the decrease of the ***epoxide*** concn. Both systems were applied for screening an expression gene bank of Rhodococcus sp. NCIMB 11216. As a ref., whole cells from Rhodococcus sp. NCIMB 11216 and Beauveria sulfurescens ATCC 7159 exhibiting ***epoxide*** hydrolase activity were used. The microtiter plate system was also evaluated for different ***epoxides*** and performed in a lab. robotic system for high throughput screening. The microtiter plate assay showed a high sensitivity for the detection of small concns. of ***epoxides*** (0.1-1 mg/well) such as styrene oxide, Et phenylglycidate, n-hexane oxide and indene oxide. The filter paper assay was further optimized for styrene oxide. Both assays were suitable to screen within libraries of ***epoxide*** hydrolases without interference with other enzymes such as esterases, lipases or proteases. The assay should allow to screen large libraries obtained by directed evolution, strain collections and (expression) gene banks for ***epoxide*** hydrolytic activity or to monitor the purifn. process of an ***epoxide*** hydrolase.

L15 ANSWER 5 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1996:684657 Document No. 125:320328 Differential reactivities of the mono- and di- ***epoxide*** of 1,3-butadiene. Bolt, Hermann M.; Cepellmann, Michaela; Jelitto, Brigitte; Hindermeier, Ulrike; Kirkovsky, Leonid I. (Institut Arbeitsphysiologie, Universitaet Dortmund, Dortmund, D-44129, Germany). Toxicology, 113(1-3), 294-296 (English) 1996. CODEN: TXCYAC.

ISSN: 0300-483X. Publisher: Elsevier.

AB The acid-catalyzed (perchloric acid) hydrolysis of 1,2-epoxybutene-3 (EB) and of 1,2:3,4-diepoxybutane (DEB), two reactive ***epoxide*** metabolites of 1,3-butadiene (BD), was detd. based on reaction of unchanged ***epoxide*** with 1-nitro-4-pyridyl-benzene (***NBP***). Related to different ***epoxide*** concns., both reactions were of first order. Related to different proton concns., second-order rate consts. were obtained (.apprx.10 s-1 M-1 perchloric acid for EB; .apprx.0.01 s-1 M-1 perchloric acid for DEB). These data show a much higher chem. stability of DEB compared to EB. Moreover, EB and DEB were reacted at pH 7.2 in 10 mM TRIS buffer with deoxyguanosine (dG), guanosine (G) or calf thymus DNA. The unreacted ***epoxides*** (EB or DEB) present in the incubation mixts. with time were detd. by gas chromatog. Consistent with the results of the acid-catalyzed hydrolysis, the second-order rate consts. for reaction with dG, G or DNA were more than 10-fold higher with EB, compared to those with DEB.

L15 ANSWER 6 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN

1994:572733 Document No. 121:172733 Reaction kinetics of alkyl ***epoxides*** with DNA and other nucleophiles. Hemminki, Akseli; Vaeyrynen, Taneli; Hemminki, Kari (Center for Nutrition and Toxicology, Karolinska Institute, Novum, Huddinge, 14157, Swed.). Chemico-Biological Interactions, 93(1), 51-8 (English) 1994. CODEN: CBINA8. ISSN: 0009-2797.

AB 1,2-Epoxy alkanes from C3 to C8 were reacted with DNA, deoxyguanosine and 4-(p-nitrobenzyl)pyridine (***NBP***). DNA was hydrolyzed at neutral pH to release 7-alkylguanines. The products were analyzed by HPLC. The ***epoxides*** reacted largely according to the chain length, shorter ***epoxides*** being more reactive. Substitutions through carbon 1 predominated. Reactivity with ***NBP*** was almost equal between the ***epoxides*** .

L15 ANSWER 7 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN

1994:291745 Document No. 120:291745 Multivariate characterization and modeling of the chemical reactivity of ***epoxides*** . Eriksson, Lennart; Verhaar, Henk J. M.; Hermens, Joop L. M. (Res. Inst. Toxicol., Univ. Utrecht, Utrecht, 3508 TD, Neth.). Environmental Toxicology and Chemistry, 13(5), 683-91 (English) 1994. CODEN: ETOCDK. ISSN: 0730-7268.

AB The chem. reactivity of ***epoxides*** is an important determinant for their toxic effects. The issue of modeling the chem. reactivity toward the nucleophile 4- ***nitrobenzylpyridine*** (***NBP***) of a series of 15 ***epoxides*** is addressed. For this purpose a multivariate characterization of their chem. and structural properties is carried out using quantum chem. MO calcns. By means of partial least-squares projections to latent structures (PLS), a set of nine theor. descriptors is found to be sufficiently informative for modeling the reactivity with ***NBP*** . Two calcd. quant. structure-property relations (QSPRs) are also shown to exhibit sound predictive capabilities.

L15 ANSWER 8 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN

1994:263215 Document No. 120:263215 Multivariate characterization and modeling of the chemical reactivity of ***epoxides*** . Part II. Extension to Di and trisubstitution. Eriksson, Lenmart; Verhaar, Henk J. M.; Sjoestroem, Michael; Hermens, Joop L. M. (Res. Inst. Toxicol., Univ. Utrecht, Utrecht, 2508 TD, Neth.). Quantitative Structure-Activity Relationships, 12(4), 357-66 (English) 1993. CODEN: QSARDI. ISSN: 0931-8771.

AB The chem. reactivity toward 4- ***nitrobenzylpyridine*** (4- ***NBP***) of a series of twelve mono-, di- and trisubstituted ***epoxides*** has been modeled by means of multivariate quant. structure-property relationships (QSPRs). The models were established using theor. descriptor variables and partial least squares (PLS) anal. It was found that a multivariate set of eleven descriptor variables was sufficient to adequately model the chem. reactivity. Furthermore, there existed a non-linear relationship between the theor. descriptors and the chem. reactivity. Two-component PLS models were generally required, using the second component to compensate for non-linearity in the first. The nature of the non-linearity suggests that different physico-chem. factors are regulating the chem. reactivity among two obsd. subgroups of ***epoxides*** . The reactivity of one group of five ***epoxides*** with one non-substituted ring carbon is regulated by the electroneg.

properties of the substituent on the other ring carbon, whereas the reactivity of seven di- and trisubstituted ***epoxides*** depends on a combination of the substitution pattern around the ***epoxide*** ring and the size of these substituents. Two addnl. points of general relevance for QSPR modeling are also addressed, namely predictor variable selection and appropriate transformation of the dependent variable.

L15 ANSWER 9 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1993:17773 Document No. 118:17773 Use of 4-(nitrobenzyl)pyridine (4-***NBP***) to test mutagenic potential of slow-reacting ***epoxides*** , their corresponding olefins, and other alkylating agents. Kim, Jae H.; Thomas, John J. (Sch. Public Health, Univ. Michigan, Ann Arbor, MI, 48109, USA). Bulletin of Environmental Contamination and Toxicology, 49(6), 879-85 (English) 1992. CODEN: BECTA6. ISSN: 0007-4861.
AB The Chem. Activation System proved to be practical in elucidating the reactivity of indirect alkylating agents. Evidence of alkylation of 4-***NBP*** is presumed to be evidence of mutagenic risk, and thus the test may prove to be a simple, nonbiol. indicator of carcinogenic risks. It was evident that certain olefins have significant indirect alkylating potential indicating carcinogenic/mutagenic risks.

L15 ANSWER 10 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1992:100745 Document No. 116:100745 The utility of computed superdelocalizability for predicting the LC50 values of ***epoxides*** to guppies. Purdy, Rich (3M, St. Paul, MN, 55133, USA). Science of the Total Environment, 109-110, 553-6 (English) 1991. CODEN: STENDL. ISSN: 0048-9697.
AB A QSAR was found for predicting the pseudo-first-order reaction rate const. of the alkylating chem., 4- ***nitrobenzylpyridine*** , with a set of ***epoxides*** . The superdelocalizability of the unoccupied levels of the orbital along the carbon-oxygen bond of the least substituted carbon was found to be an excellent predictor. This parameter, along with the log of the octanol/water partition coeff. (log P), were the predictors in a QSAR for guppy (Poecilia reticulata) 14-day LC50 values.

L15 ANSWER 11 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1990:50393 Document No. 112:50393 Binding of polycyclic and nitropolycyclic aromatic hydrocarbons to specific fractions of rat lung chromatin. Mitchell, C. E.; Akkaraju, S. (Inhalat. Toxicol. Res. Inst., Lovelace Biomed. Environ. Res. Inst., Albuquerque, NM, 87185, USA). Cancer Letters (Shannon, Ireland), 48(2), 129-34 (English) 1989. CODEN: CALEDQ. ISSN: 0304-3835.
AB Carcinogen-induced damage to nuclear matrix DNA, the site of DNA replication and transcription, could have profound effects on gene regulation and mutation. 1,6-Dinitropyrene (1,6-DNP), 1-nitropyrene (1-NP), 6-nitrobenzo[a]pyrene (6- ***NBP***), benzo[a]pyrene (BP), and benzo[a]pyrenediol ***epoxide*** (BPDE) were investigated for their abilities to bind to selected regions of DNA in rat lung cell nuclei. Following in vitro exposure to carcinogen, nuclei were fractionated into active chromatin (AC), nuclear matrix (NM), and bulk (low and high salt) chromatin fractions. At an equiv. molar concn., the highest binding to unfractionated (total) DNA was obtained with BPDE, followed in order by BP, 1,6-DNP, 6- ***NBP*** , and 1-NP. BPDE, a direct alkylating compd., was bound .apprx.18 times higher than the other compds. All compds. were bound to AC (mononucleosomal DNA .apprx.185 bp) and to NM in greater amts. than to bulk DNA. The binding ratios (AC + NM)/(LS + HS) varied from 2 to 21, depending upon the compd. The selective binding to specific DNA regions did not appear to be significantly related to the structures of the parent compds. or to their inferred metabolites. Thus, it appears that selective binding to specific regions is a general phenomenon that is related to the open state of the chromatin structure.

L15 ANSWER 12 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1989:52559 Document No. 110:52559 A quantitative structure-activity relationship for the acute toxicity of some epoxy compounds to the guppy. Deneer, J. W.; Sinnige, T. L.; Seinen, W.; Hermens, J. L. M. (Dep. Vet. Pharmacol., Pharm. Toxicol., Univ. Utrecht, Utrecht, 3508 TD, Neth.). Aquatic Toxicology, 13(3), 195-204 (English) 1988. CODEN: AQTODG. ISSN: 0166-445X.
AB The 14-day LC50 values of epoxy compds. to the guppy (Poecilia reticulata)

were detd., and investigated through the construction of a quant. structure-activity relation (QSAR). Both hydrophobicity and alkylating potency of the compds. are necessary parameters for the satisfactory description of the LC50 data. The findings of the present study are compared to results published for halogenated alkylating agents (J. Hermens et al., 1985), some of which are considerably more toxic than predicted on the basis of the QSAR established for the epoxy compds.

L15 ANSWER 13 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1988:586113 Document No. 109:186113 1,2-Epoxycycloalkanes: substrates and inhibitors of microsomal and cytosolic ***epoxide*** hydrolases in mouse liver. Magdalou, Jacques; Hammock, Bruce D. (Dep. Entomol., Univ. California, Davis, CA, 95616, USA). Biochemical Pharmacology, 37(14), 2717-22 (English) 1988. CODEN: BCPCA6. ISSN: 0006-2952.
AB Six different 1,2-epoxycycloalkanes, whose rings were composed of 5-12 C atoms, were tested as possible inhibitors of ***epoxide*** -metabolizing enzymes and as substrates for the microsomal and cytosolic ***epoxide*** hydrolases (mEH, cEH) in mouse liver. The geometric configurations and the relative steric hindrances of these ***epoxides*** were estd. from their ease of hydrolysis in acidic conditions to the corresponding diols, their abilities to react with ***nitrobenzylpyridine*** , and the chem. shifts of the groups assocd. with the oxirane rings as measured by 1H- and 13C-NMR. The cyclopentene, -hexene, -octene, and -decene oxides adopted mainly a cis configuration. By contrast, cyclododecene oxide presented a trans configuration. Steric hindrance increased with the size of the ring and was particularly strong when cyclooctene, -decene and -dodecene oxides were considered. With the exception of cyclohexene oxide, all the compds. were weak inhibitors of EH and glutathione S-transferase (GST) activities. Cyclohexene oxide exhibited a selective inhibition of the mEH, with an I50 of 4.0 .times. 10-6M. As the size of the ring increased, inhibitory potency was gradually lost. The cEH and the GST activities were less sensitive to the inhibitory effects of these ***epoxides*** (I50, .gtoreq.1 mM). A marked difference between the substrate selectivities of mEH and cEH for these ***epoxides*** was obsd. The mEH hydrated all of the cyclic ***epoxides*** , although some of them at a very low rate; the best substrate was the cycloheptene oxide. On the other hand, cyclodecene oxide was a substrate of cEH, but no diol formation was detected when cyclopentene, -hexene and -dodecene oxides were incubated with cytosolic enzyme.

L15 ANSWER 14 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1985:401885 Document No. 103:1885 In vitro mutagenicity of valepotriates. Von der Hude, W.; Scheutwinkel-Reich, M.; Braun, R.; Dittmar, W. (Max von Pettenkofer-Inst., Berlin, D-1000/45, Fed. Rep. Ger.). Archives of Toxicology, 56(4), 267-71 (English) 1985. CODEN: ARTODN. ISSN: 0340-5761.
GI

/ Structure 4 in file .gra /

AB Valepotriates are ***epoxide*** -bearing triesters of the monoterpene alc. 4,7-dimethylcyclopenta[c]pyrane isolated from the roots of several Valerianacae species. Although the valepotriates valtrate [18296-44-1]/isovaltrate (I) [31078-10-1] and dihydrovaltrate [18296-45-2] showed a strong alkylating activity against the nucleophilic agent 4-(p-nitrobenzyl)pyridine (***NBP***), they were not clearly mutagenic for the strains TA 98, 100, 1535, and 1537 of Salmonella tryphimurium or WP2 and WP2 uvrA- of Escherichia coli in the absence of a metabolic activation system (S9-mix). However, the valepotriates were mutagenic for TA 100, WP2, and WP2 uvrA- at concns. .ltoreq.1.0 .mu.mol/plate when S9-mix was added to the test system. With >1 .mu.mol/plate, the valepotriates were toxic in the presence of a metabolic activation system for all strains tested. The mutagenicity of the valepotriates was inversely related to the protein content of the S9-mix used. The mutagenicity and toxicity of the valepotriates could be inhibited when the S9-mix was preincubated with the esterase inhibitor paraoxon (1 mM) for 5 min before the test compds. and bacteria were added. Therefore, bioactivation of the valepotriates by an enzymic hydrolysis of

their ester groups is considered.

L15 ANSWER 15 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1983:212438 Document No. 98:212438 Simple colorimetric method for determination of episulfides, using 4-(p-nitrobenzyl)pyridine. Petroski, Richard J. (North. Reg. Res. Cent., Agric. Res. Serv., Peoria, IL, 61604, USA). Journal - Association of Official Analytical Chemists, 66(2), 309-11 (English) 1983. CODEN: JANCA2. ISSN: 0004-5756.
AB Episulfides were detd. by a simple colorimetric assay by using 4-(p-nitrobenzyl)pyridine, which has been used previously for the detection and anal. of ***epoxides*** , organophosphates, and other alkylating agents. With episulfides, absorbance was directly proportional to concn. up to an absorbance of at least 1.0. No interference was obsd. with a variety of nonepisulfide S-contg. substances. The colorimetric method is useful in monitoring 1-cyanoepithioalkane formation from the degrdn. of glucosinolates contg. terminal double bonds.

L15 ANSWER 16 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1983:211297 Document No. 98:211297 Mutagenicity of 3 structurally related ***epoxides*** , with defined stereochemical configuration, in Saccharomyces cerevisiae and in V-79 Chinese hamster cells. Turchi, G.; Bauer, C.; Bronzetti, G.; Citti, L.; Corsi, C.; Fassina, G. F.; Gervasi, P. G.; Lippi, A.; Nieri, R.; et al. (Ist. Mutagen. Differenziamento, CNR, Pisa, Italy). Mutation Research, 117(1-2), 213-24 (English) 1983. CODEN: MUREAV. ISSN: 0027-5107.
GI

/ Structure 5 in file .gra /

AB Three structurally related ***epoxides*** , 3,4-epoxycyclohexene (I) [6705-51-7], trans-1,2,3,4-diepoxycyclohexane (II) [36736-23-9], and trans-3,4-epoxycyclohexane-r-1,trans-2-diol (III) [85761-63-3], were tested for their ability to induce point mutation, mitotic gene conversion, and recombination in a diploid strain (D7) of the yeast S. cerevisiae, with and without a mammalian microsomal activation system, and the formation of 6-thioguanine-resistant mutants in V-79 hamster cells. The genetic effects were related to the alkylating properties of the ***epoxides*** , as measured by alkylation of 4-(p-nitrobenzyl)pyridine (***NBP***). Of the 3 ***epoxides*** , only I, characterized by the highest reactivity towards ***NBP*** , induced all the genetic effects in both test systems. A marginal activity was shown by II only in the yeast. The lack of genetic activity of III in spite of the formal similarity of its functional groups with those present in mutagenic polycyclic arene epoxydiols was attributed to the dramatic redn. of lipophilicity of the mol.

L15 ANSWER 17 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1982:117247 Document No. 96:117247 Alkylation in vitro: comparison of alkylation rate and mutagenicity. Hemminke, K.; Falk, K.; Vainio, H. (Inst. Occup. Health Prot., Helsinki, Finland). Gigiena Truda i Professional'nye Zabolevaniya (1), 43-4 (Russian) 1982. CODEN: GTPZAB. ISSN: 0016-9919.
GI

/ Structure 6 in file .gra /

AB Alkylation under in vitro conditions may be useful to evaluate the mutagenicity of chems. Alkylation of 4-(p-nitrobenzyl)pyridine (I) [1083-48-3] and deoxyguanosine [961-07-9] with epoxy compds. without any metabolic activation was examd. and compared with mutagenic activity in Escherichia coli WP2 UVRA. Among the halogen-substituted ***epoxides*** , alkylation rate and mutagenicity of epichlorohydrin [106-89-8] and epibromohydrin [3132-64-7] was almost equal and exceeded that of epifluorohydrin [503-09-3]. Other ***epoxides*** propylene oxide [75-56-9], butylene oxide [26249-20-7], and butadiene monooxide

[930-22-3] were much less reactive and mutagenic than the halogen-substituted compds. In a related study, alkylation reactivity and mutagenicity of the bisphenol derivs. decreased with increasing mol. wt. Poor soly. of the ***epoxide*** resins with increasing mol. wt. interfered with the investigation. phenylglycidyl ether [122-60-1] Had higher activity than the Bu [2426-08-6], allyl [106-92-3], and isopropyl [3814-55-9] derivs. The alkylation test may be useful for the preliminary evaluation of chem. compds.

L15 ANSWER 18 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1982:29479 Document No. 96:29479 Comparison of the alkylation of nicotinamide and 4-(p-nitrobenzyl)pyridine for the determination of aliphatic ***epoxides*** . Nelis, Hans J. C. F.; Airy, Subhash C.; Sinsheimer, J. E. (Coll. Pharm., Univ. Michigan, Ann Arbor, MI, 48109, USA). Analytical Chemistry, 54(2), 213-16 (English) 1982. CODEN: ANCHAM. ISSN: 0003-2700.
AB The alkylation of nicotinamide [98-92-0] by a series of 10 propylene oxides and subsequent formation of a chromophore in a new procedure are compared to the conventional 4-(p-nitrobenzyl)pyridine [1083-48-3] test. Both reactions exhibited similar rates of alkylation, competing rates of solvolysis, and correlation of the extent of alkylation with the Taft .sigma.* consts. of subsequent groups. The nicotinamide procedure has the advantage that the initial alkylation can be run under more physiol. conditions and that there is an increase in the stability of the final chromophore.

L15 ANSWER 19 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1982:1577 Document No. 96:1577 Alkylating properties and genetic activity of 4-vinylcyclohexene metabolites and structurally related ***epoxides*** . Turchi, G.; Bonatti, S.; Citti, L.; Gervasi, P. G.; Abbondandolo, A.; Presciuttini, S. (Ist. Mutagenesi Diff., CNR, Pisa, Italy). Mutation Research, 83(3), 419-30 (English) 1981. CODEN: MUREAV. ISSN: 0027-5107.
GI

/ Structure 7 in file .gra /

AB The mutagenicity of the ***epoxides*** 4-vinyl-1,2-epoxycyclohexane (I) [106-86-5], 4-epoxyethyl-1,2-epoxycyclohexane [106-87-6], 4-epoxyethyl-1,2-dihydroxycyclohexane [45895-09-8], 1,2-epoxycyclohexane [286-20-4], and styrene oxide [13113-79-6] was assayed on the TA100 strain of Salmonella typhimurium and V79 Chinese hamster cells. In the latter cell system, both point mutation (6-thioguanine resistance) and chromosomal damage (anaphase bridges and micronuclei) were scored. Genetic effects were related to the alkylating properties of the ***epoxides*** . For this purpose, alkylation of 4-(p-nitrobenzyl)pyridine (NPB) [1083-48-3] and Na p-nitrothiophenolate (NTP) [13113-79-6] was measured and values for the substrate const. (s) were calcd. 4-Epoxyethyl-1,2-epoxycyclohexane, 1,2-epoxycyclohexane, and styrene oxide, characterized by the highest reactivity toward ***NBP*** and by an s value in the vicinity of 1, were mutagenic in all test systems. I and 4-epoxyethyl-1,2-dihydroxycyclohexane, characterized by lower ***NBP*** reactivity and higher s value (1.30-1.38), did not induce reversion in S. typhimurium or 6-thioguanine-resistant mutants in V79 cells, but were as effective as the 3 other compds. in the induction of chromosomal damage.

L15 ANSWER 20 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1981:152340 Document No. 94:152340 Photometric determination of microsomal ***epoxide*** hydrolase activity using a 4-(p-nitrobenzyl) pyridine test. Serrentino, R.; Gervasi, P. G. (Lab. Mutagenesi Differenziamento, CNR, Pisa, Italy). Bollettino - Societa Italiana di Biologia Sperimentale, 56(22), 2393-7 (Italian) 1980. CODEN: BSIBAC. ISSN: 0037-8771.
AB A new spectrophotometric assay for microsomal ***epoxide*** hydrolase is presented; the assay is based on the detn. of unreacted ***epoxide*** in the incubation mixt. by reaction with 4-(nitropbenzyl)pyridine (I). Rat liver microsomes are incubated at 37.degree. in the presence of 0.2 mM

oxirane at pH 7.4. Aliquots are withdrawn at time intervals, extd. in a EtOAc, dried, and redissolved in acetone before incubation at 60.degree. and pH 7.4 for 2 h in the presence of 2% I in ethylene glycol. The mixt. is then cooled to 0.degree. and the absorption at 560 nm is read immediately after addn. of triethylamine in 50% acetone.

L15 ANSWER 21 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1979:535139 Document No. 91:135139 Correlation of mutagenicity and 4-(p-nitrobenzyl)-pyridine alkylation by ***epoxides*** . Hemminki, K.; Falck, K. (Dep. Ind. Hyg. Toxicol., Inst. Occup. Health, Helsinki, SF-00290/29, Finland). Toxicology Letters, 4(2), 103-6 (English) 1979. CODEN: TOLED5. ISSN: 0378-4274.
GI

/ Structure 8 in file .gra /

AB The reactivity of simple ***epoxides*** with 4-(p-nitrobenzyl)pyridine [1083-48-3] was compared with their mutagenicity in Salmonella typhimurium TA 100 and Escherichia coli WP 2 uvrA. The order of reactivity correlated well with mutagenicity, trichloropropylene oxide [3083-23-6] being most potent followed by epichlorohydrin [106-89-8], styrene oxide [96-09-3], glycidol [556-52-5], and propylene oxide [75-56-9]. Probably, I alkylation is a simple and reliable primary assay in the evaluation of mutagenic properties.

L15 ANSWER 22 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1975:422028 Document No. 83:22028 Detection and analysis of ***epoxides*** with 4-(p-nitrobenzyl)pyridine. Hammock, Lassie G.; Hammock, Bruce D.; Casida, John E. (Div. Entomol. Parasitol., Univ. California, Berkeley, CA, USA). Bulletin of Environmental Contamination and Toxicology, 12(6), 759-64 (English) 1974. CODEN: BECTA6. ISSN: 0007-4861.
AB ***Epoxides*** were detected on paper and thin-layer chromatograms and colorimetrically detd. at 600 nm by reaction with 4-(p-nitrobenzyl)pyridine (I) to form colored derivs. The developed thin-layer and paper chromatograms were sprayed with 2 wt. % I in Me2CO and by 1 wt. % I in 50% Me2CO contg. 0.5 N K acid phthalate, resp. The sprayed chromatograms were heated at 110.degree. for 5 min and, after cooling, were sprayed with 10 vol. % tetraethylenepentamine in Me2CO to give blue spots on a white background. The sensitivities on thin layer and paper chromatograms were 0.01 - >13 and 0.01 - >6 .mu.mole, resp. The method is insensitive for epoxycycloalkanes and related compds. The colorimetric method is useful in monitoring enzymic reactions with ***epoxide*** substrates. Incubation of 4-ethylphenyl 6,7-epoxygeranyl ether (II) with buffer, followed by extn. with pentane and colorimetric detn. of II by using I established that the detection limit is 0.2 .mu.mole II and that Beer's law holds for .ltoreq.1.0 .mu.mole II.

L15 ANSWER 23 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1973:501455 Document No. 79:101455 Properties of K-region ***epoxides*** of polycyclic aromatic hydrocarbons. Swaisland, Alan J.; Grover, Philip L.; Sims, Peter (Chester Beatty Res. Inst., R. Cancer Hosp., London, UK). Biochemical Pharmacology, 22(13), 1547-56 (English) 1973. CODEN: BCPCA6. ISSN: 0006-2952.
AB Comparative studies on the properties of K-region ***epoxides*** derived from phenanthrene (I) [85-01-8], benz[a]anthracene [56-55-3], 7-methylbenz[a]anthracene [2541-69-7], 7,12-dimethylbenz[a]anthracene [57-97-6], 3-methylcholanthrene [56-49-5], and dibenz[a,h]anthracene [53-70-3] (K-region being the region of high-electron d. similar to the 9,10-bond of I) revealed that there are appreciable differences in the rates at which the ***epoxides*** , (a) rearrange in neutral soln. to the corresponding phenols, and (b) are metabolized by rat liver microsomal fractions that contain the enzyme ***epoxide*** hydrase, and (c) alkylate 4-(p-nitrobenzyl)pyridine [1083-48-3].

L15 ANSWER 24 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1973:97375 Document No. 78:97375 Epoxy derivatives of aromatic polycyclic hydrocarbons. Preparation and metabolism of expoxides related to 7,12-dimethylbenz[a]anthracene. Sims, P. (Chester Beatty Res. Inst., R. Cancer Hosp., London, UK). Biochemical Journal, 131(2), 405-13 (English)

1973. CODEN: BIJOAK. ISSN: 0264-6021.
GI For diagram(s), see printed CA Issue.
AB 7,12-Dimethylbenz[a]anthracene 5,6- ***epoxide*** (I) and 7-(hydroxymethyl)-12-methylbenz[a]anthracene 5,6- ***epoxide*** (II) rearranged to phenols in the presence of mineral acid, and reacted with H2O to give trans-5,6-dihydro-5,6-dihydroxy-7,12-dimethylbenz[a]anthracene and trans-5,6-dihydro-5,6-dihydroxy-7-(hydroxymethyl)-12-methylbenz[a]-anthracene, resp. I and II were metabolized by rat-liver microsomal fractions and homogenates into the related trans-dihydrodiols and reacted chem. or enzymically with glutathione to form conjugates.

L15 ANSWER 25 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1973:43123 Document No. 78:43123 Epoxy derivatives of aromatic polycyclic hydrocarbons. Synthesis of dibenz[a,c]anthracene 10,11-oxide and its metabolism by rat liver preparations. Sims, P. (Chester Beatty Res. Inst., R. Cancer Hosp., London, UK). Biochemical Journal, 130(1), 27-35 (English) 1972. CODEN: BIJOAK. ISSN: 0264-6021.
GI For diagram(s), see printed CA Issue.
AB Dibenz[a,c]anthracene 10,11-oxide (I), prepd. by std. methods from triphenylene, was converted by rat liver microsomal prepns. and homogenates into a product that is probably 10,11-dihydro-10,11-dihydroxydibenz[a,c]anthracene and which was identical with the product of dibenz[a,c]anthracene metab. by rat liver homogenates; I did not react chem. or enzymically with GSH. 10,11-Dihydrodibenz[a,c]anthracene and its 12,13-oxide (II) were metabolized by rat liver prepns. into trans-10,11,12,13-tetrahydro-10,11-dihydroxydibenz[a,c]anthracene (III), and II was converted chem. into III and reacted chem. but not enzymically with GSH. In the alkylation of 4-(p-nitrobenzyl)pyridine the "K-region" ***epoxide*** , dibenz[a,h]anthracene 5,6-oxide, was more active than I or 10,11-dihydrodibenz[a,c]anthracene 12,13-oxide.

L15 ANSWER 26 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1970:497070 Document No. 73:97070 Interactions of the K-region ***epoxides*** of phenanthrene and dibenz[a,h]anthracene with nucleic acids and histone. Grover, Philip L.; Sims, Peter (Chester Beatty Res. Inst., Roy. Cancer Hosp., London, UK). Biochemical Pharmacology, 19(7), 2251-9 (English) 1970. CODEN: BCPCA6. ISSN: 0006-2952.
AB In neutral soln. at 37.degree., the K-region ***epoxides*** of phenanthrene and dibenz[a,h]anthracene (phenanthrene 9,10-oxide and dibenz[a,h]anthracene 5,6-oxide) are more reactive towards p-***nitrobenzylpyridine*** than Me methanesulfonate, Et methanesulfonate and phenanthrene, dibenz[a,h]anthracene and their corresponding K-region dihydrodiols did not react. Tritiated K-region ***epoxides*** of phenanthrene and dibenz[a,h]anthracene reacted with DNA, RNA, and histone on incubation at 37.degree.. The parent hydrocarbons and their resp. K-region dihydrodiols did not react. The reaction of the K-region ***epoxide*** of phenanthrene with DNA was reduced by the addn. of rat-liver microsomes but the reaction of the K-region ***epoxide*** of dibenz[a,h]anthracene with DNA was not affected. The possible implications of the reactions of hydrocarbon ***epoxides*** with cellular constituents is discussed in relation to chem. carcinogenesis.

L15 ANSWER 27 OF 27 CAPLUS COPYRIGHT 2003 ACS on STN
1969:498121 Document No. 71:98121 Detection of alkylating agents. II. Detection of different classes of alkylating agents by a modification of the color reaction with 4-(4-nitrobenzyl)pyridine(***NBP***). Preussmann, Rudolf; Schneider, Hans; Epple, F. (Forschergruppe Praeventiomed., Max-Planck-Inst. Immunbiol., Freiburg/Br., Fed. Rep. Ger.). Arzneimittel-Forschung, 19(7), 1059-73 (German) 1969. CODEN: ARZNAD. ISSN: 0004-4172.
AB The following classes of alkylating agents can be detected by a modification of their color reaction with 4-(4-nitrobenzyl)pyridine (I): halogenated aliphatic and aromatic compds.; halogenated pesticides; esters of strong acids; lactones and sultones; ***epoxides*** ; ethylenimines; diazo compds.; nitrosamides; nitrosamines; geminal-disubstituted compds.; onium compds.; compds. contg. activated double bonds; azoalkanes and hydrazones; triazines. The degrees of pos. response are presented for 212 compds. Add 1 ml. of soln. contg. 0.005 millimole sample in glycol monomethyl ether (II) to 1 ml. of 5% I in II and heat either 10 or 60 min. at 100 .+-. 0.5.degree.. Rapidly cool the sample to 20.degree., add 0.5 ml. piperidine (III), dil. to 5 ml. with II, and measure the absorbance at

560 nm., against a reagent blank, exactly 90 sec. after the III addn. Alternatively, 4-(4-nitrobenzyl)pyridine perchlorate is substituted for I, glycol dimethyl ether is substituted for II, the sample is heated 60 min. at 75 .+-. 0.5.degree., and the absorbance is measured at 545 nm.

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=> E ZOCHER/AU
=> S E12,E13
             4 "ZOCHER F"/AU
             4 "ZOCHER FRANK"/AU
L16          8 ("ZOCHER F"/AU OR "ZOCHER FRANK"/AU)

=> E ENZELBERGER M/AU
=> S E3-E6
             3 "ENZELBERGER M"/AU
             3 "ENZELBERGER M M"/AU
             5 "ENZELBERGER MARKUS"/AU
             7 "ENZELBERGER MARKUS M"/AU
L17         18 ("ENZELBERGER M"/AU OR "ENZELBERGER M M"/AU OR "ENZELBERGER
               MARKUS"/AU OR "ENZELBERGER MARKUS M"/AU)

=> E SCHMID R/AU
=> S E3,E5,E51-E53
           293 "SCHMID R"/AU
           141 "SCHMID R D"/AU
           129 "SCHMID ROLF"/AU
           302 "SCHMID ROLF D"/AU
             9 "SCHMID ROLF DIETER"/AU
L18        874 ("SCHMID R"/AU OR "SCHMID R D"/AU OR "SCHMID ROLF"/AU OR "SCHMID
                ROLF D"/AU OR "SCHMID ROLF DIETER"/AU)

=> E WOHLLEBEN/AU
=> S E3,E6
            40 "WOHLLEBEN W"/AU
            72 "WOHLLEBEN WOLFGANG"/AU
L19        112 ("WOHLLEBEN W"/AU OR "WOHLLEBEN WOLFGANG"/AU)

=> E HAUER B/AU
=> S E3,E6-E8
            22 "HAUER B"/AU
             3 "HAUER BERND"/AU
            76 "HAUER BERNHARD"/AU
             1 "HAUER BERNHARDT"/AU
L20        102 ("HAUER B"/AU OR "HAUER BERND"/AU OR "HAUER BERNHARD"/AU OR
               "HAUER BERNHARDT"/AU)


=> S L16,L17,L18,L19,L20
L21       1079 (L16 OR L17 OR L18 OR L19 OR L20)

=> S L21 AND L8
L22          5 L21 AND L8

=> S L22 NOT (L9,L15)
L23          2 L22 NOT ((L9 OR L15))

=> D 1-2 CBIB ABS

L23  ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2003 ACS on STN
2003:705520  Spectrophotometric assay for   ***epoxide***     ***hydrolase***
     activity toward any epoxide.  Doderer, Kai; Lutz-Wahl, Sabine;   ***Hauer,***
  ***     Bernhard***  ;   ***Schmid, Rolf D.***   (Institute for Technical
     Biochemistry, University of Stuttgart, Allmandring 31, Stuttgart, D-70569,
     Germany).  Analytical Biochemistry, 321(1), 131-134 (English) 2003.
     CODEN: ANBCA2.  ISSN: 0003-2697.  Publisher: Elsevier Science.
AB   Unavailable

L23  ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2003 ACS on STN
2002:494997  Posters. B1.51. A novel   ***epoxide***     ***hydrolase***
     assay.  Doderer, K.; Lutz-Wahl, S.;   ***Enzelberger, M.***  ;   ***Hauer,***
  ***     B.***  ;   ***Schmid, R. D.***   (Universitat Stuttgart).  Chemie
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Ingenieur Technik, 74(5), 683 (English) 2002. CODEN: CITEAH. ISSN: 0009-286X. Publisher: Wiley-VCH Verlag GmbH.

AB Unavailable

	L #	Hits	Search Text	DBs
1	L1	314	EPOXIDE ADJ HYDROLASE	USPAT ; US-PG PUB
2	L2	15484	STREPTOMYCES	USPAT ; US-PG PUB
3	L3	21	L2 SAME L1	USPAT ; US-PG PUB
4	L4	102	L2 AND L1	USPAT ; US-PG PUB
5	L5	39891	EPOXIDE	USPAT ; US-PG PUB
6	L6	36	NITROBENZYLPYRIDINE	USPAT ; US-PG PUB
7	L7	336	NBP	USPAT ; US-PG PUB
8	L8	7	L5 AND L6	USPAT ; US-PG PUB
9	L9	7	L5 AND L8	USPAT ; US-PG PUB
10	L10	7	L8 OR L9	USPAT ; US-PG PUB
11	L11	0	L1 AND (L6 OR L7)	USPAT ; US-PG PUB